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## Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 28 February 1961

FROM :

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SUBJECT: Trip Report -

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1. [redacted] was visited on 15 and 16 February 1961 [redacted] and on 16 and 17 February 1961 [redacted] to monitor progress on Contract 605, Task Orders 8, 9, 11, and 12 [redacted] and 10 [redacted] Present for discussions and demonstrations were:

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2. Under Task Order 8, a system of antennas, detectors, and filters is being developed for ELINT activity in the 50 mc to 40 kmc frequency range. Task Order 8 has been extended to 14 April to allow time for optimizing design of the stripline filters and to allow time for a redesign of the throat-loaded 10 to 40 kmc horn-filter system. Additional effort has been directed toward producing filters that can be economically reproduced using production line techniques, and it has developed that the extremely close mechanical tolerances heretofore deemed essential can be relaxed with no deterioration in performance. The throat-loaded horn to cover the 10 - 40 kmc range has been redesigned to eliminate pattern degradation which occurred at approximately 35 kmc using the old system of inserting a slab of very high dielectric constant material into the throat of the horn. The new design uses a larger connecting waveguide which has a metal sleeve inserted around a material of much lower dielectric constant when operating in the 30 - 40 and 20 - 40 kmc mode. For the 10 - 40 kmc mode the metal sleeve is removed and a material with relatively low dielectric constant (4.8) is inserted. The materials involved in the new design are much less fragile than the material formerly used, and therefore, pattern degradation, due to wear of the slabs of dielectric materials, should be greatly reduced.

3. Task Order 9 is a development and production contract for five 1 - 10 kmc LP Antenna Dish Feeds, AN-45. These antennas have been received at the warehouse and are going into stock.

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4. Task Order 11 is a production contract for items developed under Task Order 8. Components are being fabricated as the design becomes firm, however, this task will necessarily have to be extended since the delivery date is contingent upon completion of Task Order 8.

5. Task Order 12 is a production contract for three CS-8 type antennas less outdoor mounts. The antennas have been received at the warehouse but are being held in receiving because of missing parts. The contractor was notified of the discrepancy and has promised prompt attention. A method of remotely rotating this type of antenna was discussed with the contractor, and a proposal solicited for production of five units.

6. Task Order 10 is a study program directed toward the use of unconventional antennas, especially items normally found in a household or hotel room. The initial approach to the problem was first to develop a tuner capable of matching the wide range of impedances encountered and then investigate the radiating characteristics of the various structures and their preferred feed points. A composite tuner, bridge, and wideband noise generator has been incorporated into a tuning system capable of meeting the test requirements. (See Attachments 1 and 2).

7. To demonstrate the matching technique and some unusual radiators the contractor matched the output of a  KWM-2 100 watt transmitter to the silvered back of a 5' x 1½' mirror, a piano frame and strings, a metal coat rack, and a metal chair on 7.1 and 14.3 mc and communicated with a ham operator at . The contractor also stated that the tuning system could be packaged in a case approximately 5" x 4" x 1½".

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**Attachments:**

- 1)  Progress Report No. 5
- 2)  Progress Report No. 6

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